**Space Weather Highlights**
**25 March - 31 March 2013**

**SWPC PRF 1961**
**01 April 2013**

Solar activity was very low. Region 1710 (S21, L=201, class/area Cao/070 on 29 Mar) produced the largest event of the period with a B8 flare at 30/1024 UTC. Other activity included a B4 x-ray event observed at 30/1322 UTC from Region 1708 (N11, L=190, class/area Dao/090 on 29 Mar) with an associated Type II radio sweep (estimated shock speed of 814 km/s). No Earth-directed CMEs were observed during the period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels for the majority of the period with the exception of 27 and 29 March due to effects from coronal hole high speed stream (CH HSS) activity.

Geomagnetic field activity was at quiet levels on 25-26 March. Quiet to active conditions were observed on 27-28 March due to effects from a favorably positioned CH HSS. Solar wind speed gradually increased from initial values of approximately 400 km/s to end-of-day values of approximately 500 km/s. The interplanetary magnetic field (IMF) Bt values ranged from 1 nT to 11 nT while the Bz component of the IMF ranged from +7 nT to -11 nT. A further increase to unsettled to minor storm conditions was observed on 29-30 March due to effects from a second CH HSS. During that period, solar wind speed remained fairly steady averaging about 550 km/s. The IMF Bt values ranged from a high of 8 nT to a low of 1 nT while the Bz component of the IMF ranged from +5 nT to - 7 nT. The field returned to quiet levels midday on 30 March and remained quiet through the end of the period.

**Space Weather Outlook**
**01 April - 27 April 2013**

Solar activity is expected to be very low to low throughout the period. There is a slight chance for M-class activity from 01 - 13 April while Region 1711 (S17, L=159, class/area Cki/420 on 31 Mar) is on the disk.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels through 04 April and again from 25 April through the end of the period due to CH HSS effects. The remainder of the period is expected to be at normal to moderate levels.

Geomagnetic field activity is expected to begin the period at quiet levels. Quiet to unsettled conditions are expected from 03-07 April due to weak CH HSS effects. A return to mostly quiet conditions is expected on 08-22 April. Quiet to unsettled conditions with a chance for active periods are possible on 23-26 April due to recurrent CH HSS effects. The remainder of the period is expected to be at quiet levels.

## *Daily Solar Data*

| Date | Radio Flux 10.7cm | Sun spot No. | Sunspot Area ($10^{-6}$ hemi.) | X-ray Background Flux | Flares | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | X-ray | | | Optical | | | | |
| | | | | | C | M | X | S | 1 | 2 | 3 | 4 |
| 25 March | 93 | 56 | 170 | B1.0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 26 March | 92 | 41 | 140 | B1.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 March | 93 | 35 | 100 | B1.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 March | 99 | 49 | 170 | B1.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 March | 105 | 73 | 280 | B2.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 March | 108 | 70 | 480 | B2.7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 March | 113 | 83 | 630 | B2.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## *Daily Particle Data*

| Date | Proton Fluence (protons/cm $^2$ -day -sr) | | | Electron Fluence (electrons/cm$^2$ -day -sr) | | |
|---|---|---|---|---|---|---|
| | >1 MeV | >10 MeV | >100 MeV | >0.6 MeV | >2MeV | >4 MeV |
| 25 March | 8.3e+05 | 1.1e+04 | 2.8e+03 | | 7.3e+07 | |
| 26 March | 7.8e+05 | 1.1e+04 | 2.7e+03 | | 8.1e+07 | |
| 27 March | 1.6e+06 | 1.1e+04 | 2.8e+03 | | 1.0e+07 | |
| 28 March | 4.2e+05 | 1.1e+04 | 3.0e+03 | | 3.9e+07 | |
| 29 March | 4.2e+05 | 1.2e+04 | 2.7e+03 | | 9.7e+06 | |
| 30 March | 5.0e+05 | 1.1e+04 | 2.6e+03 | | 7.0e+07 | |
| 31 March | 5.0e+05 | 1.1e+04 | 2.7e+03 | | 1.7e+08 | |

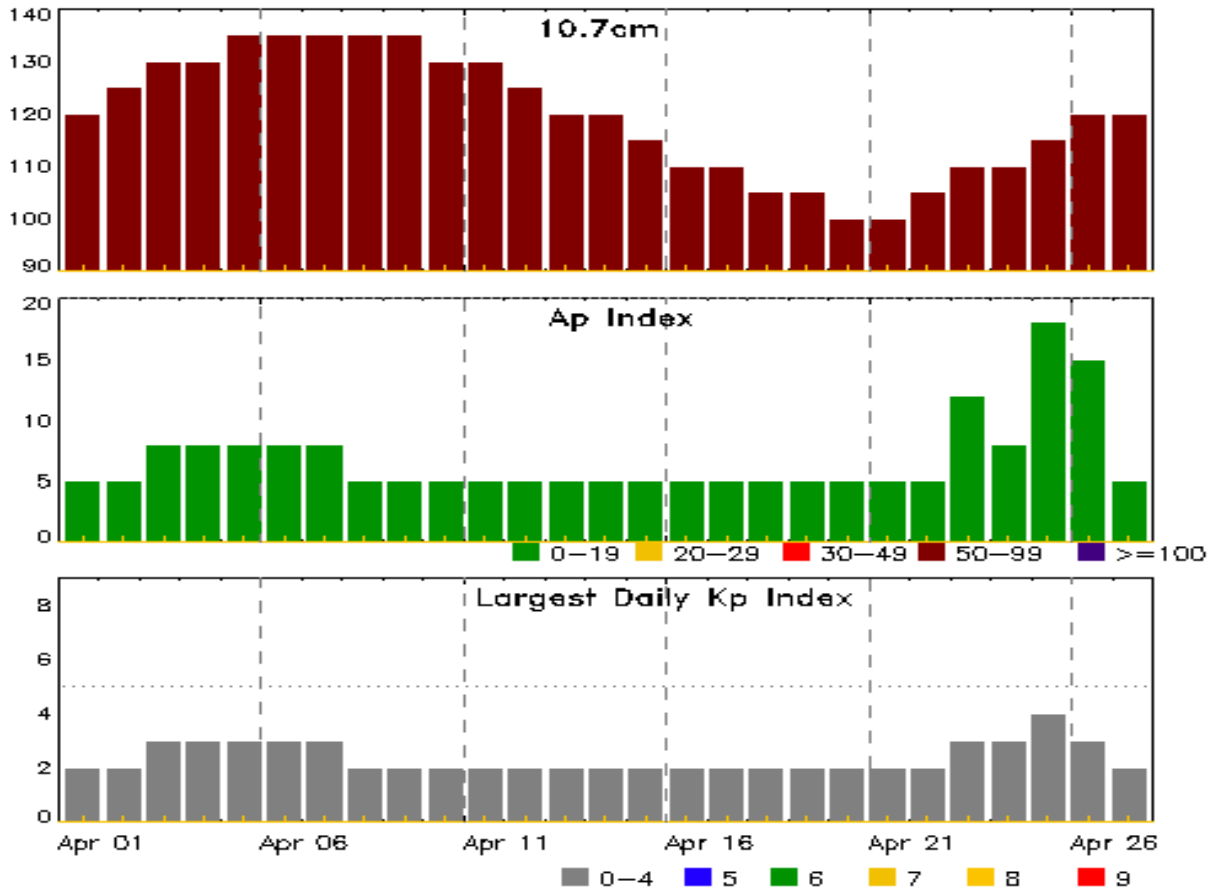
## *Daily Geomagnetic Data*

| Date | Middle Latitude Fredericksburg | | High Latitude College | | Estimated Planetary | |
|---|---|---|---|---|---|---|
| | A | K-indices | A | K-indices | A | K-indices |
| 25 March | 3 | 0-0-1-1-2-1-2-1 | 2 | 0-0-0-1-1-0-1-1 | 4 | 0-0-1-1-1-1-2-1 |
| 26 March | 2 | 1-0-0-1-1-2-1-0 | 0 | 1-0-0-0-0-0-0-0 | 3 | 1-1-0-1-0-1-1-0 |
| 27 March | 9 | 1-2-2-2-3-2-2-3 | 29 | 2-2-3-5-6-5-3-3 | 14 | 1-2-2-3-3-4-3-4 |
| 28 March | 10 | 4-1-1-2-2-3-2-2 | 15 | 3-2-4-5-1-2-2-1 | 9 | 4-1-1-2-1-2-2-2 |
| 29 March | 19 | 3-3-4-4-3-4-2-3 | 51 | 2-4-7-6-5-6-3-2 | 23 | 3-3-4-4-3-5-3-3 |
| 30 March | 12 | 4-4-2-2-2-2-2-2 | 21 | 4-6-2-4-2-2-2-1 | 17 | 5-5-2-2-1-2-3-2 |
| 31 March | 3 | 1-0-0-1-1-2-1-1 | 4 | 2-1-1-1-0-2-1-1 | 4 | 1-0-1-1-1-2-1-1 |

## *Alerts and Warnings Issued*

| Date & Time of Issue UTC | Type of Alert or Warning | Date & Time of Event UTC |
|---|---|---|
| 25 Mar 1246 | ALERT: Electron 2MeV Integral Flux >= 1000pfu | 25/1215 |
| 25 Mar 1517 | WATCH: Geomagnetic Storm Category G1 predicted | |
| 26 Mar 1219 | CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu | 25/1215 |
| 27 Mar 1639 | WARNING: Geomagnetic K = 4 | 27/1700 - 28/0000 |
| 27 Mar 1755 | ALERT: Geomagnetic K = 4 | 27/1754 |
| 27 Mar 2324 | EXTENDED WARNING: Geomagnetic K = 4 | 27/1700 - 28/1200 |
| 28 Mar 1545 | ALERT: Electron 2MeV Integral Flux >= 1000pfu | 28/1530 |
| 29 Mar 0315 | WARNING: Geomagnetic K = 4 | 29/0400 - 0800 |
| 29 Mar 0726 | EXTENDED WARNING: Geomagnetic K = 4 | 29/0400 - 1500 |
| 29 Mar 0803 | ALERT: Geomagnetic K = 4 | 29/0759 |
| 29 Mar 1455 | EXTENDED WARNING: Geomagnetic K = 4 | 29/0400 - 2359 |
| 29 Mar 1634 | WARNING: Geomagnetic K = 5 | 29/1634 - 2359 |
| 29 Mar 1801 | ALERT: Geomagnetic K = 5 | 29/1757 |
| 29 Mar 1922 | WATCH: Geomagnetic Storm Category G1 predicted | |
| 29 Mar 2327 | EXTENDED WARNING: Geomagnetic K = 4 | 29/0400 - 30/0800 |
| 30 Mar 0138 | WARNING: Geomagnetic K = 5 | 30/0137 - 0800 |
| 30 Mar 0150 | ALERT: Geomagnetic K = 5 | 30/0149 |
| 30 Mar 0756 | EXTENDED WARNING: Geomagnetic K = 4 | 29/0400 - 30/1200 |
| 30 Mar 1351 | ALERT: Electron 2MeV Integral Flux >= 1000pfu | 30/1335 |
| 30 Mar 1423 | ALERT: Type II Radio Emission | 30/1322 |
| 30 Mar 1906 | CANCELLATION: Geomagnetic Storm Category G1 predicted | |
| 31 Mar 0501 | CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu | 30/1335 |

## *Twenty-seven Day Outlook*




| Date | Radio Flux 10.7cm | Planetary A Index | Largest Kp Index | Date | Radio Flux 10.7cm | Planetary A Index | Largest Kp Index |
|---|---|---|---|---|---|---|---|
| 01 Apr | 120 | 5 | 2 | 15 Apr | 115 | 5 | 2 |
| 02 | 125 | 5 | 2 | 16 | 110 | 5 | 2 |
| 03 | 130 | 8 | 3 | 17 | 110 | 5 | 2 |
| 04 | 130 | 8 | 3 | 18 | 105 | 5 | 2 |
| 05 | 135 | 8 | 3 | 19 | 105 | 5 | 2 |
| 06 | 135 | 8 | 3 | 20 | 100 | 5 | 2 |
| 07 | 135 | 8 | 3 | 21 | 100 | 5 | 2 |
| 08 | 135 | 5 | 2 | 22 | 105 | 5 | 2 |
| 09 | 135 | 5 | 2 | 23 | 110 | 12 | 3 |
| 10 | 130 | 5 | 2 | 24 | 110 | 8 | 3 |
| 11 | 130 | 5 | 2 | 25 | 115 | 18 | 4 |
| 12 | 125 | 5 | 2 | 26 | 120 | 15 | 3 |
| 13 | 120 | 5 | 2 | 27 | 120 | 5 | 2 |
| 14 | 120 | 5 | 2 | | | | |

## *Energetic Events*

| | Time | | | X-ray | | Optical Information | | | Peak Radio Flux | | Sweep Freq Intensity | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Begin | Max | Half Max | Class | Integ Flux | Imp/ Brtns | Location Lat CMD | Rgn # | 245 | 2695 | II | IV |

**No Events Observed**

## *Flare List*

| | Time | | | | Optical | | |
|---|---|---|---|---|---|---|---|
| Date | Begin | Max | End | X-ray Class | Imp/ Brtns | Location Lat CMD | Rgn # |
| 25 Mar | 1304 | 1308 | 1313 | B2.6 | SF | N19E55 | 1704 |
| 25 Mar | 1743 | 1748 | 1754 | B4.4 | SF | N18E52 | 1704 |
| 26 Mar | 0330 | 0333 | 0337 | B2.0 | | | |
| 26 Mar | 0510 | 0513 | 0517 | B2.8 | | | |
| 26 Mar | 1218 | 1306 | 1337 | B2.7 | | | 1700 |
| 27 Mar | 1723 | 1730 | 1737 | B2.0 | | | 1704 |
| 27 Mar | 1837 | 1847 | 1911 | B2.6 | | | 1708 |
| 28 Mar | 0034 | 0044 | 0052 | B3.2 | | | 1708 |
| 28 Mar | 0303 | 0338 | 0424 | B5.3 | | | 1708 |
| 30 Mar | 1016 | 1024 | 1032 | B8.8 | | | 1710 |
| 30 Mar | 1306 | 1322 | 1331 | B4.8 | | | |
| 31 Mar | 0247 | 0251 | 0253 | B8.2 | | | 1711 |

## *Region Summary*

| | Location | | Sunspot Characteristics | | | | | Flares | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Helio | Area | Extent | Spot | Spot | Mag | X-ray | | | Optical | | | | |
| Date | Lat CMD | Lon | $10^{-6}$ hemi. | (helio) | Class | Count | Class | C | M | X | S | 1 | 2 | 3 | 4 |
| | | | ***Region 1700*** | | | | | | | | | | | | |
| 17 Mar | S13E54 | 352 | 10 | 3 | Bxo | 2 | B | | | | | | | | |
| 18 Mar | S13E41 | 352 | 60 | 5 | Cso | 5 | B | | | | | | | | |
| 19 Mar | S13E27 | 353 | plage | | | | | | | | | | | | |
| 20 Mar | S13E13 | 353 | 10 | 1 | Axx | 1 | A | | | | | | | | |
| 21 Mar | S13W01 | 354 | plage | | | | | | | | | | | | |
| 22 Mar | S13W15 | 355 | plage | | | | | | | | | | | | |
| 23 Mar | S13W29 | 356 | plage | | | | | | | | | | | | |
| 24 Mar | S13W43 | 357 | plage | | | | | | | | | | | | |
| 25 Mar | S13W57 | 358 | plage | | | | | | | | | | | | |
| 26 Mar | S13W71 | 358 | plage | | | | | | | | | | | | |
| 27 Mar | S13W85 | 359 | plage | | | | | | | | | | | | |
| | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Crossed West Limb.
Absolute heliographic longitude: 354

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ***Region 1702*** | | | | | | | | | | | | |
| 21 Mar | N08W24 | 16 | 20 | 3 | Dro | 5 | B | | | | | | | | |
| 22 Mar | N08W38 | 18 | 40 | 4 | Dao | 4 | B | | | | | | | | |
| 23 Mar | N08W51 | 18 | 50 | 6 | Cao | 7 | B | | | | | | | | |
| 24 Mar | N07W64 | 18 | 60 | 6 | Cao | 9 | B | | | | | | | | |
| 25 Mar | N08W74 | 18 | 40 | 9 | Cao | 4 | B | | | | | | | | |
| 26 Mar | N08W88 | 15 | 40 | 9 | Cao | 4 | B | | | | | | | | |
| | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Crossed West Limb.
Absolute heliographic longitude: 16

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ***Region 1703*** | | | | | | | | | | | | |
| 22 Mar | S25W59 | 39 | 40 | 5 | Dao | 5 | B | | | | 2 | | | | |
| 23 Mar | S25W72 | 39 | 80 | 7 | Dao | 7 | B | | | | 1 | | | | |
| 24 Mar | S26W84 | 38 | 40 | 6 | Cao | 5 | B | | | | | | | | |
| 25 Mar | S26W93 | 38 | 30 | 2 | Cao | 2 | B | | | | | | | | |
| | | | | | | | | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |

Crossed West Limb.
Absolute heliographic longitude: 39

## *Region Summary - continued*

| | Location | | Sunspot Characteristics | | | | | Flares | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Helio | Area | Extent | Spot | Spot | Mag | X-ray | | | Optical | | | | |
| Date | Lat CMD | Lon | $10^{-6}$ hemi. | (helio) | Class | Count | Class | C | M | X | S | 1 | 2 | 3 | 4 |
| | | | ***Region 1704*** | | | | | | | | | | | | |
| 23 Mar | N15E74 | 253 | 60 | 3 | Hsx | 1 | A | | | | | | | | |
| 24 Mar | N16E60 | 254 | 80 | 3 | Hax | 1 | A | | | | | | | | |
| 25 Mar | N16E45 | 255 | 70 | 3 | Cao | 4 | B | | | | 2 | | | | |
| 26 Mar | N16E31 | 256 | 70 | 2 | Hax | 4 | A | | | | | | | | |
| 27 Mar | N15E18 | 255 | 80 | 2 | Hax | 2 | A | | | | | | | | |
| 28 Mar | N15E06 | 255 | 90 | 4 | Hax | 1 | A | | | | | | | | |
| 29 Mar | N15W08 | 256 | 90 | 3 | Cao | 3 | B | | | | | | | | |
| 30 Mar | N15W21 | 256 | 70 | 2 | Hax | 3 | A | | | | | | | | |
| 31 Mar | N15W34 | 255 | 70 | 2 | Hax | 2 | A | | | | | | | | |
| | | | | | | | | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |

Still on Disk.
Absolute heliographic longitude: 255

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ***Region 1705*** | | | | | | | | | | | | |
| 25 Mar | S12E21 | 279 | 30 | 4 | Dao | 6 | B | | | | | | | | |
| 26 Mar | S12E07 | 280 | 30 | 6 | Cao | 3 | B | | | | | | | | |
| 27 Mar | S12W11 | 284 | 10 | 1 | Axx | 1 | A | | | | | | | | |
| 28 Mar | S12W24 | 285 | plage | | | | | | | | | | | | |
| 29 Mar | S12W38 | 286 | plage | | | | | | | | | | | | |
| 30 Mar | S12W52 | 287 | plage | | | | | | | | | | | | |
| 31 Mar | S12W66 | 287 | plage | | | | | | | | | | | | |
| | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.
Absolute heliographic longitude: 280

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ***Region 1706*** | | | | | | | | | | | | |
| 27 Mar | S06E04 | 268 | 10 | 2 | Bxo | 2 | B | | | | | | | | |
| 28 Mar | S06W09 | 270 | 10 | 4 | Bxo | 2 | B | | | | | | | | |
| 29 Mar | S06W24 | 272 | plage | | | | | | | | | | | | |
| 30 Mar | S06W39 | 274 | plage | | | | | | | | | | | | |
| 31 Mar | S07W52 | 273 | plage | | | | | | | | | | | | |
| | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.
Absolute heliographic longitude: 268

## *Region Summary - continued*

| | Location | | Sunspot Characteristics | | | | | Flares | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Helio | Area | Extent | Spot | Spot | Mag | X-ray | | | Optical | | | | |
| Date | Lat CMD | Lon | $10^{-6}$ hemi. | (helio) | Class | Count | Class | C | M | X | S | 1 | 2 | 3 | 4 |
| | | | ***Region 1707*** | | | | | | | | | | | | |
| 28 Mar | S11E32 | 229 | 20 | 3 | Bxo | 4 | B | | | | | | | | |
| 29 Mar | S11E18 | 230 | 50 | 4 | Cao | 7 | B | | | | | | | | |
| 30 Mar | S11E04 | 231 | 40 | 2 | Hax | 2 | A | | | | | | | | |
| 31 Mar | S11W12 | 233 | 30 | 4 | Cao | 5 | B | | | | | | | | |
| | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.
Absolute heliographic longitude: 231

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ***Region 1708*** | | | | | | | | | | | | |
| 28 Mar | N12E71 | 190 | 50 | 4 | Cso | 2 | B | | | | | | | | |
| 29 Mar | N11E58 | 190 | 90 | 6 | Dao | 4 | B | | | | | | | | |
| 30 Mar | N11E45 | 190 | 90 | 6 | Cso | 4 | B | | | | | | | | |
| 31 Mar | N11E30 | 191 | 50 | 5 | Cso | 4 | B | | | | | | | | |
| | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.
Absolute heliographic longitude: 191

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ***Region 1709*** | | | | | | | | | | | | |
| 29 Mar | S33W21 | 269 | 10 | 3 | Bxo | 4 | B | | | | | | | | |
| 30 Mar | S33W35 | 270 | plage | | | | | | | | | | | | |
| 31 Mar | S33W49 | 270 | plage | | | | | | | | | | | | |
| | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.
Absolute heliographic longitude: 269

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ***Region 1710*** | | | | | | | | | | | | |
| 29 Mar | S22E49 | 199 | 40 | 4 | Cao | 5 | B | | | | | | | | |
| 30 Mar | S21E34 | 201 | 70 | 7 | Cao | 7 | B | | | | | | | | |
| 31 Mar | S22E20 | 201 | 50 | 8 | Cao | 6 | B | | | | | | | | |
| | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.
Absolute heliographic longitude: 201

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ***Region 1711*** | | | | | | | | | | | | |
| 30 Mar | S17E77 | 158 | 210 | 4 | Cai | 4 | B | | | | | | | | |
| 31 Mar | S17E62 | 159 | 420 | 5 | Cki | 4 | B | | | | | | | | |
| | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.
Absolute heliographic longitude: 159

## *Region Summary - continued*

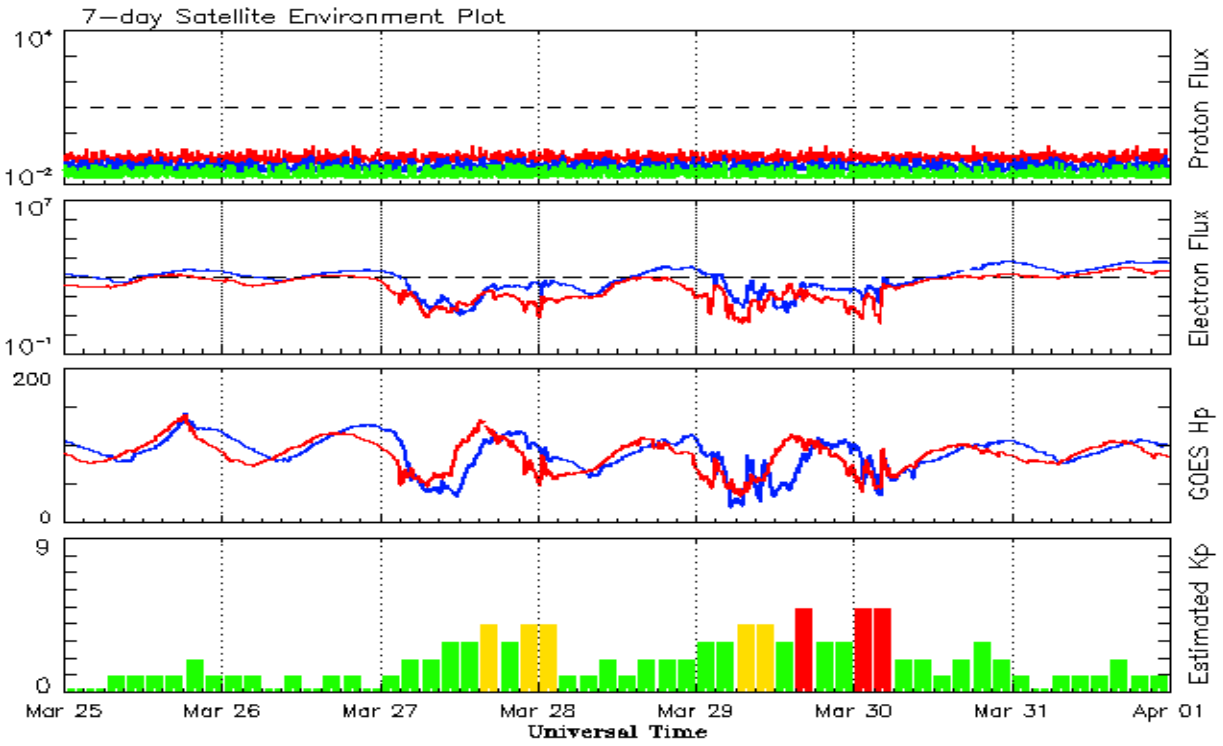
| | Location | | Sunspot Characteristics | | | | | Flares | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Helio | Area | Extent | Spot | Spot | Mag | X-ray | | | Optical | | | | |
| Date | Lat CMD | Lon | $10^{-6}$ hemi. | (helio) | Class | Count | Class | C | M | X | S | 1 | 2 | 3 | 4 |
| | | ***Region 1712*** | | | | | | | | | | | | | |
| 31 Mar | N01E38 | 183 | 10 | 3 | Cro | 2 | B | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.
Absolute heliographic longitude: 183

## *Recent Solar Indices (preliminary)*
## *Observed monthly mean values*

| | Sunspot Numbers | | | | | Radio Flux | | Geomagnetic | |
|---|---|---|---|---|---|---|---|---|---|
| | Observed values | | Ratio | Smooth values | | Penticton | Smooth | Planetary | Smooth |
| Month | SEC | RI | RI/SEC | SEC | RI | 10.7 cm | Value | Ap | Value |
| | | | | ***2011*** | | | | | |
| April | 81.7 | 54.4 | 0.67 | 61.5 | 41.8 | 112.6 | 100.4 | 9 | 7.5 |
| May | 61.4 | 41.6 | 0.68 | 69.0 | 47.6 | 95.9 | 105.6 | 9 | 7.5 |
| June | 55.5 | 37.0 | 0.67 | 76.5 | 53.2 | 95.8 | 110.9 | 8 | 7.4 |
| July | 67.0 | 43.8 | 0.66 | 82.5 | 57.3 | 94.2 | 115.4 | 9 | 7.3 |
| August | 66.1 | 50.6 | 0.77 | 84.9 | 59.0 | 101.7 | 117.9 | 8 | 7.4 |
| September | 106.4 | 78.0 | 0.73 | 84.6 | 59.5 | 134.5 | 118.4 | 13 | 7.7 |
| October | 116.8 | 88.0 | 0.75 | 84.6 | 59.9 | 137.2 | 118.4 | 7 | 8.0 |
| November | 133.1 | 96.7 | 0.73 | 86.3 | 61.1 | 153.1 | 119.5 | 3 | 8.0 |
| December | 106.3 | 73.0 | 0.69 | 89.2 | 63.4 | 141.2 | 121.6 | 3 | 8.0 |
| | | | | ***2012*** | | | | | |
| January | 91.3 | 58.3 | 0.64 | 92.0 | 65.5 | 133.1 | 124.4 | 6 | 8.3 |
| February | 50.1 | 32.9 | 0.66 | 94.2 | 66.9 | 106.7 | 126.7 | 7 | 8.4 |
| March | 77.9 | 64.3 | 0.82 | 94.1 | 66.8 | 115.1 | 126.8 | 14 | 8.1 |
| April | 84.4 | 55.2 | 0.65 | 91.3 | 64.6 | 113.1 | 125.8 | 9 | 8.0 |
| May | 99.5 | 69.0 | 0.69 | 87.7 | 61.7 | 121.5 | 123.8 | 8 | 8.2 |
| June | 88.6 | 64.5 | 0.73 | 83.9 | 58.9 | 120.5 | 121.1 | 10 | 8.3 |
| July | 99.6 | 66.5 | 0.67 | 82.4 | 57.7 | 135.6 | 119.5 | 13 | 8.3 |
| August | 85.8 | 63.0 | 0.74 | 83.1 | 58.1 | 115.7 | 119.2 | 7 | 8.1 |
| September | 84.0 | 61.4 | 0.73 | 83.7 | | 123.2 | 118.9 | 8 | 7.8 |
| October | 73.5 | 53.3 | 0.73 | | | 123.3 | | 9 | |
| November | 89.2 | 61.4 | 0.69 | | | 120.9 | | 6 | |
| December | 60.4 | 40.8 | 0.68 | | | 108.4 | | 3 | |
| | | | | ***2013*** | | | | | |
| January | 99.8 | 62.9 | 0.63 | | | 127.1 | | 4 | |
| February | 60.0 | 38.0 | 0.63 | | | 104.4 | | 5 | |
| March | 81.0 | | | | | 111.2 | | 9 | |

**Note:** Values are final except for the most recent 6 months which are considered preliminary. Cycle 24 started in Dec 2008 with an RI=1.7.




*Weekly Geosynchronous Satellite Environment Summary*
*Week Beginning 25 March 2013*

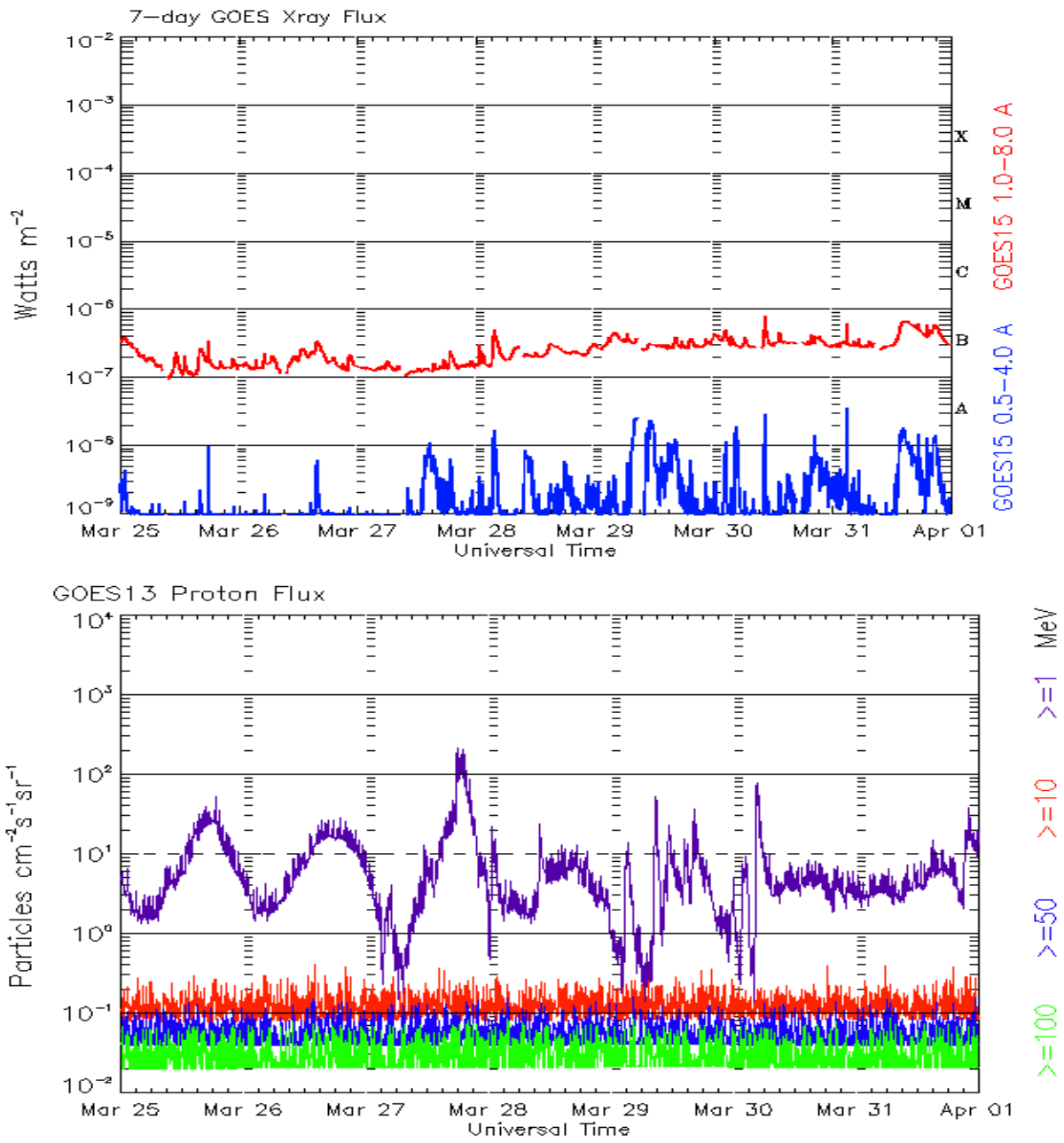
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm$^2$-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm$^2$-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

The Hp plot contains the five minute averaged Hp magnetic field component in nanoteslas (nT) as by the SWPC Primary GOES satellite. The Hp component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

The Estimated 3-hour Planetary Kp-index is derived at the NOAA Space Weather Prediction Center using data from the following ground-based magnetometers: Boulder, Colorado; Chambon la Foret, France; Fredericksburg, Virginia; Fresno, California; Hartland, UK; Newport, Washington; Sitka, Alaska. These data are made available thanks to the cooperative efforts between SWPC and data providers around the world, which currently includes the U.S. Geological Survey, the British Geological Survey, and the Institut de Physique du Globe de Paris.

The data included here are those now available in real time at the SWPC and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and Kp are 'global' parameters that are applicable to a first order approximation over large areas. H parallel is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.




*Weekly GOES Satellite X-ray and Proton Plots*
*Week Beginning 25 March 2013*

The x-ray plots contains five-minute averages x-ray flux (Watt/m$^2$) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

The proton plot contains the five-minute averaged intergral flux units (pfu = protons/cm$^2$ -sec -sr) as measured by the primary SWPC GOES Proton satellite for each of the energy thresholds: >1, >10, >30, and >100 MeV. The P10 event threshold is 10 pfu at greater than 10 MeV.

## *Preliminary Report and Forecast of Solar Geophysical Data (The Weekly)*

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**Notice:** The 27-day Outlook, Satellite Environment, X-ray and Proton plots have been redesigned. Comments and suggestions are welcome SWPC.Webmaster@noaa.gov

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http://spaceweather.gov/SolarCycle/ -- Solar Cycle Progression web site

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